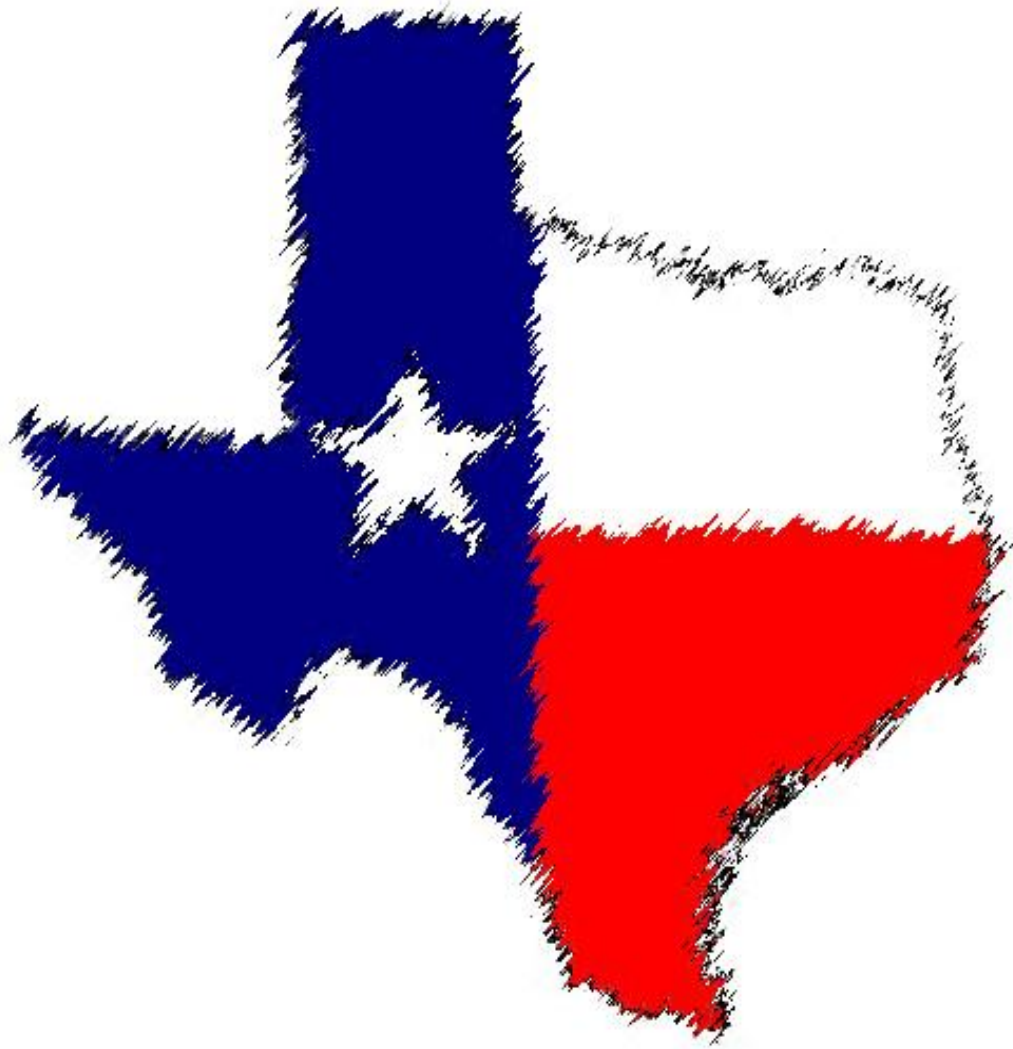


# **Texas Fire Weather Operating Plan**

**2009**



**-This page intentionally blank-**

# Texas Fire Weather Operating Plan 2009

**National Weather Service**  
U.S. Dept of Commerce

**NWS Southern Region Headquarters**  
819 Taylor Street, Room 10A06  
Fort Worth, TX 76102

**Document Prepared by:**  
Monte Oaks  
Austin/San Antonio NWS Office

Jason Runyen  
Corpus Christi NWS Office

**NWS Signatories:**  
Monte Oaks  
Austin/San Antonio NWS Office

Paul Witsaman  
NWS Southern Region Headquarters

**Latest Revision Date:**  
April 2009



# TEXAS FIRE WEATHER OPERATING PLAN

## TABLE OF CONTENTS

<b>I. INTRODUCTION.....</b>	<b>6</b>
<b>A. DOCUMENT REVISION AND AGENCY SIGNATORIES.....</b>	<b>6</b>
<b>B. RECENT UPDATES.....</b>	<b>7</b>
<b>II. NWS FIRE WEATHER SERVICES .....</b>	<b>8</b>
<b>A. NATIONAL WEATHER SERVICE ORGANIZATION .....</b>	<b>8</b>
<b>B. INTERAGENCY COOPERATION .....</b>	<b>8</b>
<b>C. BASIC FORECAST PRODUCTS .....</b>	<b>10</b>
<b>1. Fire Weather Planning Forecasts (FWF) .....</b>	<b>10</b>
<b>2. The Red Flag Program (RFW).....</b>	<b>11</b>
a. Criteria.....	11
i. Fire Weather Watch.....	12
ii. Red Flag Warning.....	12
b. Dissemination and Access.....	12
c. Format and Valid Times .....	12
<b>3. Spot Forecasts (FWS) .....</b>	<b>13</b>
<b>4. National Fire Danger Rating System Forecasts (FWM) .....</b>	<b>15</b>
<b>5. Supplementary Products .....</b>	<b>15</b>
a. Hazardous Weather Outlooks.....	15
b. Fire Danger Statements.....	16
c. Area Forecast Discussions .....	16
d. Special Weather Statements .....	16
e. Fire Warnings.....	16
<b>D. FORECAST WEATHER COMPONENTS .....</b>	<b>16</b>
<b>1. Headline Statement/Weather Synopsis.....</b>	<b>16</b>
<b>2. Precipitation and Thunderstorms .....</b>	<b>17</b>
<b>3. Sky Condition .....</b>	<b>17</b>
<b>4. Miscellaneous Weather Phenomena.....</b>	<b>17</b>
<b>5. Relative Humidity (RH).....</b>	<b>17</b>
<b>6. Winds and Mixing.....</b>	<b>17</b>
a. 20-foot winds.....	17

b. Eye-level winds .....	18
c. Transport winds / ventilation index .....	18
i. Mixing height or mixing depth .....	18
ii. Transport Winds .....	18
iii. Ventilation Index .....	18
7. Lightning Activity Level .....	19
8. Haines Index .....	19
9. Inversion Burn-off .....	20
E. SPECIALIZED SERVICES .....	20
1. The IMET Program .....	20
F. NWS WEATHER FORECAST OFFICES .....	22
1. NWS Amarillo (AMA) .....	23
2. NWS Austin/San Antonio (EWX) .....	25
3. NWS Brownsville (BRO) .....	27
4. NWS Corpus Christi (CRP) .....	29
5. NWS El Paso (EPZ) .....	31
6. NWS Fort Worth/Dallas (FWD) .....	33
7. NWS Houston/Galveston (HGX) .....	35
8. NWS Lake Charles (LCH) .....	37
9. NWS Lubbock (LUB) .....	39
10. NWS Midland/Odessa (MAF) .....	41
11. NWS Oklahoma City (OUN) .....	44
12. NWS San Angelo (SJT) .....	46
13. NWS Shreveport (SHV) .....	48
<b>III. Appendices .....</b>	<b>50</b>
APPENDIX 1: RFW RH / WIND CRITERIA SUMMARY FOR TEXAS..	51
APPENDIX 2: NFDRS STATIONS .....	52
APPENDIX 3: LIST OF ABBREVIATIONS AND ACRONYMS .....	54
APPENDIX 4: INTERNET LINKS .....	55
APPENDIX 5: TEXAS IMET LIST .....	57
APPENDIX 6: AGENCY SIGNATORIES .....	58

## I. INTRODUCTION

This document serves as the Fire Weather Annual Operating Plan (AOP) for the state of Texas. The National Interagency Agreement for Meteorological Services mandates that the National Weather Service (NWS) and the interagency wildland fire management community coordinate and cooperate on developing fire weather policy, standards and guidelines. Each NWS Office is expected to maintain an AOP for its area of responsibility, documenting the local agreements, policies, and procedural information regarding the delivery of meteorological services to the fire management community. The Texas Fire Weather Operating Plan (TX-FWOP) is a consolidated operating plan, summarizing the cumulative meteorological services provided for the state of Texas. This consolidation is necessary in order to improve efficiency between the 13 NWS offices and their respective customer agencies. NWS offices may use this plan to serve as their local AOP; however, offices with responsibilities overlapping into other states, will maintain a separate plan.

### A. DOCUMENT REVISION AND AGENCY SIGNATORIES

Annual revisions of the TX-FWOP are planned and published during minimal wildfire activity; this is usually performed in the spring months for Texas. The TX-FWOP should reflect that the varied interests from all federal and state land management agencies in Texas are represented. Each year, both the NWS and the customer agencies will appoint signatories representing their agency interests.

NWS signatories will confirm customer agency signatories annually, and solicit their approval of annual TX-FWOP revisions through email. Copies of the annual email confirmations will be appended to copies of the TX-FWOP revisions and retained by at least one of the NWS signatories for a period of at least 5 years. Intermediate revisions and corrections will not require unanimous customer agency approval, but NWS signatories are responsible for demonstrating that they have informed customer agency signatories of the changes. A brief notation of each revision is included at the end of this introduction section.

#### **NWS Signatories**

NWS signatories include [Monte Oaks](#) (Fire Weather Program Leader, NWS Austin/San Antonio) and [Paul Witsaman](#), (Regional Fire Weather Program Leader, NWS Southern Region Headquarters). (alternate email addresses removed)

#### **Customer Agency Signatories**

Agency signatories representing land management customers of fire weather products are listed in *Appendix 6: Agency Signatories*. Requested changes to the Texas Fire Weather Operating Plan should be made in cooperation with at least one of these customer agency signatories. Local NWS office policies and service changes will

typically be coordinated from the local NWS office to the NWS signatories after the local NWS office has reached an agreement with their customer agencies. These changes are may prompt an intermediate TX-FWOP revision if considered significant by any of the agency signatories. Details on local NWS office change requests are provided in *Section II.B. Interagency Cooperation*.

Requests for new signatories or changes to existing signatories in this document should be in cooperation with all agency signatories.

## **B. RECENT UPDATES**

All significant updates will be reviewed by signatories. Draft revisions will need signatory approval before the updates are published. This section will summarize any updates necessary for signatory review in the past 12 months.

- *Updated RFW criteria for EWX*
- *Updated Contacts for various NWS offices*
- *Updated Appx 5: IMET/Trainees List*
- *Updated RFW write-up to reflect new NDS*
- *Added SPS and FRW in Section II.C.5: Supplementary Products*
- *Added links to PFW under Appx 4: Internet Links*
- *Added email confirmation process for signatory approval*
- *Revised wording on Section I.A: Document Revision and Agency Signatories*
- *Addition to Agency Signatory list: George Weick, USFS, and Denver Ingram, SACC*

## II. NWS FIRE WEATHER SERVICES

### NWS MISSION

"The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community. "

This NWS mission is accomplished through the issuance of warnings and forecasts targeting primarily the general public. However, through an [Interagency Agreement for Meteorological Services](#) established between the NWS and wildland fire agencies, these warnings and forecasts have been extended to support specific land management and fire protection activities.

### A. NATIONAL WEATHER SERVICE ORGANIZATION

Based on the interagency agreement, national standards for fire weather forecast products and services are established in the [NWS Directives System \(NDS\)](#). These guidelines are then applied to local agreements set for in local Area Operating Plans such as the TX-FWOP.

NWS offices are staffed continuously by personnel that include one or more professional meteorologists trained in fire weather. Each NWS office has a designated individual with special knowledge and training to serve as the Fire Weather Program Leader (FWPL). FWPLs are responsible for the majority of interagency communication between the NWS and the fire community, providing outreach, training, and other specialized services. Additional responsibilities of the FWPL include local policy implementation of forecast products and services, and local forecaster training.

The NWS also maintains a network of specialists dedicated to providing specialized weather support, usually at a remote location. These on-site weather forecasters are commonly known as Incident Meteorologists (IMETs). IMETs are highly trained, strategically positioned NWS employees scattered across the United States for regional fire weather and all-hazards support. However, the IMET may be dispatched to support incidents anywhere in the country or even internationally. Details on the IMET and the all-hazards program are provided in *Section II.E* of this document.

### B. INTERAGENCY COOPERATION

The [Interagency Agreement for Meteorological Services](#) establishes coordination guidelines between the NWS and participating wildland fire agencies. As indicated in



this agreement, interagency wildland fire agency personnel stationed at the [National Interagency Fire Center \(NIFC\)](#), the Geographic Area Coordination Centers (GACCs), and local interagency coordination centers will work together to ensure fire agency decision makers receive consistent and coordinated fire weather products and services. Collectively, these agencies play a significant role in resource procurement, training and policy guidance, and the communication of operational fire weather information.

GACCs supporting the state of Texas include the [Southwest Area Coordination Center \(SWCC\)](#) for areas west of 100° W longitude and the [Southern Area Coordination Center \(SACC\)](#) for areas east of 100° W longitude. The [Texas Interagency Coordination Center \(TICC\)](#) serves as the local coordination center. Participating agencies served within this infrastructure are listed for each NWS office in *Section II.F*.

### **NWS Forecast Product Availability**

Fire weather forecast products from the NWS are transmitted through the Advanced Weather Interactive Processing System (AWIPS). These products are available on the US Forest Service's Weather Information Management System (WIMS) as well as the Internet. While the NWS has responsibility to ensure successful transmission through AWIPS and its communications subsystems to the Telecommunications Gateway (TG), it maintains no control over the operation of WIMS.

Fire weather products are available on the Internet at each local NWS office website, but a backup means of receiving weather products should be made available to wildland fire agencies through facsimile, electronic mail, or other agreed upon methods. NWS products can also be monitored by land management agencies on the National Fire Weather Page provided by NWS Boise, ID at <http://fire.boi.noaa.gov>.

### **The Red Flag Program**

The NWS Red Flag program is designed to alert customer agencies of critical weather patterns that will make the control of fires difficult. This alert is primarily done through the issuance of a Fire Weather Watch or Red Flag Warning product. Details on NWS product specifications are provided in the [NDS 10-401](#) and in *Section II.C* of the TX-FWOP.

The criteria for Red Flag conditions are established by the NWS Fire Weather Program Leader (FWPL) for each NWS Office's forecast area based primarily on the recommendations from the customer agencies. Since fuel dryness is an important component of this program, the NWS depends on customer agencies to make fire danger assessments. Direct consultation with a local fire behavior specialist will ensure the most up to date information on fuel characteristics. When direct consultation is not possible, forecasters are advised to use fire danger assessments from the Forest Service with the categories of "HIGH" and "EXTREME" for providing the validation needed for issuing an RFW product.

NWS Offices should ensure that Red Flag Warnings and Fire Weather Watches (RFW) are received by the Texas Interagency Coordination Center (TICC) for distribution to the customer agencies across Texas. When weather conditions are near or exceeding RFW criteria levels, forecasters should contact TICC to make customer agencies aware of any non-routine updates to fire weather forecast products. Customer agencies performing operations that impact life or property should coordinate their operations with TICC so that any changes to NWS forecast can be communicated to them.

### **Changes of Service**

NWS Offices making changes to forecast products and procedures should provide notification to their respective customer agencies. NWS policy on notification procedures are provided in the NWS Directives System.

Customer agencies requesting changes in forecast products and services from a particular weather office should submit a formal request to the Meteorologist-in-Charge (MIC) of the respective NWS office. Queries regarding procedural matters, details of the fire weather program or equipment, special operational needs, et cetera, should be addressed to the FWPL or MIC of the appropriate NWS office. Contact information on each FWPL and MIC of the NWS offices serving Texas as well as a description of local products and services are listed for each office in *Section II.F*.

## **C. BASIC FORECAST PRODUCTS**

All National Weather Service offices serving the state of Texas will issue a core suite of fire weather products as indicated in [NDS 10-401](#) consisting of the following:

- 1) Fire Weather Planning Forecasts
- 2) Fire Weather Watches and Red Flag Warnings
- 3) Spot Forecasts
- 4) National Fire Danger Rating System (NFDRS) Forecasts

*Section II.C.5. Supplementary Products* covers additional fire weather related products, some of which are considered optional or experimental. This includes:

- Hazardous Weather Outlooks and Area Forecast Discussions (all NWS offices)
- Fire Danger Statements (issued locally)
- Fire Weather Point Forecast Matrices (issued locally)

A glossary of basic fire weather parameters is not provided in this document; customer agencies are encouraged to use *Appendix 4* for Internet links containing information on fire weather and NWS forecast terminology. NDS 10-401 covers the basic product format. Product examples from each NWS office are available from Internet links in *Appendix 4*.

### **1. Fire Weather Planning Forecasts (FWF)**

Fire weather planning forecasts are available to anyone with an interest in land management and pre-suppression activities in Texas.

**Issuance Times:**

- At least once per day—usually in the early morning.
- Routine afternoon updates common to many offices.
- Specific issuance times determined by local agreements.

**Content:**

Based on NWS Directive System requirements, all FWFs contain:

- A headline to emphasize a red flag warning or a significant change in weather conditions,
- Weather synopsis or map discussion,
- Predictions of sky cover and weather, temperature, humidity, and wind, and thunderstorms and/or precipitation, and
- An outlook or extended forecast through at least 5 days.

Each NWS office determines which optional forecast parameters to include in their forecasts based on customer feedback. Details on forecast parameters can be found in *Section II.D*.

**Format:**

The [NWS Directives System](#) allows for either a narrative or tabular format.

## **2. The Red Flag Program (RFW)**

The intent of the red flag program is to provide land management agencies with the notification of weather conditions associated with wildfire outbreaks. Identification of red flag events is a primary responsibility of the forecaster producing the fire weather forecasts. Forecasters will issue a fire weather watch or red flag warning, based on the criteria and timing explained below.

**a. Criteria**

Red flag criteria are dependent on both critical fire weather conditions monitored by NWS offices and the fuel moisture and fire danger assessments provided by land management agencies. Criteria will vary with each NWS office's county warning area based on the vegetation, topography, and distance from the Gulf of Mexico. Red flag criteria for each NWS office can be found in *Section II.F*. A tabular summary of critical weather thresholds is also provided for printing in *Appendix 1*.

Routine interagency coordination is necessary for establishing red flag criteria related to fuel dryness. While some NWS offices may base fuel dryness assessments solely on NFDRS rating categories, other offices may use a mix of NFDRS related outputs to account for variations in fuel characteristics, or rely on direct coordination with a fire behavior analyst. Internet sites containing fuel moisture and fire danger guidance are provided in *Appendix 4*.

### **i. Fire Weather Watch**

The policy on Fire Weather Watch issuances is established in the NWS Directive System. Forecasters should issue a Fire Weather Watch when there is a high potential for the development of a Red Flag Event. A Watch will only be issued (or continued) in the first 12-hour time period for dry thunderstorm events. For other events, the watch will be issued 12 to 96 hours in advance of the expected onset of criteria. The watch may be issued for all, or selected portions within a fire weather zone or region. The term "Fire Weather Watch" will be headlined in the routine fire weather forecast and sent as a separate RFW product titled as "Fire Weather Watch". The watch will remain in effect until it expires, is canceled, or upgraded to a red flag warning. Watches are cancelled by issuing a new short-duration RFW product.

### **ii. Red Flag Warning**

The policy on Red Flag Warning issuances is established in the NWS Directive System. A Red Flag Warning is used to warn of an impending, or occurring Red Flag Event. Its issuance denotes a high degree of confidence that weather and fuel conditions consistent with local Red Flag Event criteria will occur in 24 hours or less. Forecasters can issue the warning for all or selected portions within a fire weather zone. When a warning is issued, the term "Red Flag Warning" will be headlined in the Routine Fire Weather Forecast, and sent as a separate RFW product titled as "Red Flag Warning". The warning will be continued on subsequent forecasts until no longer valid. A cancellation statement (using the RFW product) should terminate the warning unless the previous message indicated a termination time.

### **b. Dissemination and Access**

The dissemination of the RFW should reflect local user capabilities to provide the most efficient means of getting watches/warnings to the appropriate fire suppression personnel.

Customers can find the current status of RFW conditions for a given location by viewing any of the following:

- Headline statements of the FWF and FWS
- Summary section of the AFD
- Point-and-click map on local NWS office web page
- The National Fire Weather and GACC (see Appendix 4)
- The [TICC](#) predictive services pages

### **c. Format and Valid Times**

RFW format and valid times must conform to the requirements given in [NWSI 10-401](#) of the NDS.

### **3. Spot Forecasts (FWS)**

Spot forecasts are specially requested site-specific forecasts for wildfires, prescribed burns, HAZMAT incidents, search and rescue operations, aerial spraying, and other functions of the land management community. By being site-specific, these forecasts take into account the effects of topography, vegetation and any nearby bodies of water. Based on the request, spot forecasts can contain site-specific forecast information on sky condition, precipitation and thunderstorm probability, maximum and minimum temperature and humidity, wind speed and direction, and timing of weather changes. Due to limited resources, spot forecast requests are subject to certain restrictions as indicated below.

#### **Who can request a spot forecast?**

Under the terms of the Interagency Agreement for Meteorological Services ([NDS: 10-406](#)), the NWS will provide spot forecast services upon request of any federal, state, tribal, or local official who represents a spot forecast for wildfire support. For non-wildfire purposes, resources permitting, WFOs will provide spot forecast services under the following restrictions:

- A. Upon request of any federal official who represents that the spot forecast is required under the terms of the Interagency Agreement.
- B. Upon request of any state, tribal, or local official who represents that the spot forecast is required to carry out their wildland fire management responsibilities in coordination with any federal land management agency participating in the Interagency Agreement.
- C. Upon request of any public safety official who represents the spot forecast is essential to public safety, e.g. due to the proximity of population centers or critical infrastructure. A “public safety official” is an employee or contract agent of a government agency at any level (federal, state, local, tribal, etc.) charged with protecting the public from hazards including wildland fires of whatever origin and/or other hazards influenced by weather conditions such as hazardous material releases.

Although anyone can act as a “public safety official” in the event of a fire or hazardous material related incident, it is best to coordinate a spot request through TICC or other federal, state, or local officials if available. Duplication of requests over the same incident could result in confusion or loss in response time. It is also important that non-federal agencies indicate a wildfire or other related public safety hazard as the reason for their request.

#### **Request and Response Times**

Spot forecasts are available upon request 24 hours a day, seven days a week, including holidays. These requests will be given priority over routine operations and should become available within 30 minutes of the time of request. However, protection agencies should be aware that other duties (such as severe weather) may take higher priority, and short delays may occur. If delays are excessive, please notify the appropriate NWS office. Response times will be minimized if requesting agencies develop the following habits:

- Place a 'heads-up' call to the appropriate NWS office before or immediately after sending the request
- Indicate whether the request is for wildfire support or other public safety threat
- Include preliminary observations (either manually or from a nearby station)
- Avoid processing prescribed burn forecast requests within 30 minutes of NWS shift change times; contact local NWS office personnel to learn more about potentially sensitive shift-change times.
- Use the remarks section to convey the primary weather concerns

### **Request and Dissemination Methods**

Nearly all spot forecasts are processed through an Internet program called NWS Spot. Requesting officials should consult with the appropriate NWS office for instructions on how to use this program. Each NWS office website will reference a NWS Spot tutorial in the "Fire Wx" section of the homepage. Completed spot forecasts requested through NWS Spot (for both wildfire and non-wildfire purposes) are available to everyone with access to the Internet.

Requesting officials without Internet access may also fax a form titled "Fire Weather Special Forecast Request" or otherwise known as "WS Form D-1". However, these requests must be accompanied by a phone call directly to the NWS forecast operations area in order to notify the appropriate office of the incoming fax request. Blank copies of these forms can be retrieved from the Internet at <http://www.srh.weather.gov/srh/cwwd/msd/firewx/images/D1-V2005.pdf> or faxed by request from any NWS Office. Once a faxed spot forecast request is fulfilled, NWS offices are encouraged to send a copy of the completed D-1 form to TICC for documentation purposes.

As a final resort, site-specific weather information can also be requested over the phone from NWS forecasters. This means of communication is inefficient for significant amounts of weather information.

Non-federal requesting officials should coordinate spot forecast requests with TICC using the guidelines given above and in the Interagency Agreement.

### **Format**

Spot forecast formats may vary in order to provide the best possible services to requesting agencies. A common format to support prescribed burns includes a tabular group of weather parameters for selected times of the current day. However, requests supporting wildfires or other public safety threats must conform to the guidelines in [NWSI 10-401](#) of the NDS.

### **Quality Control**

NWS offices are encouraged to develop local verification schemes to monitor forecast accuracy. The NWS asks that each spot forecast request be accompanied by a preliminary observation (recorded at the time of the request) and a follow-up



observation (recorded at the time of maximum or minimum heating depending upon the time that the request was sent) at the burn site, if possible.

Spot forecasts for prescribed burn support should typically be sent within 12 hours of the projected ignition time, and are most effective when sent within 4 hours of the ignition. Beyond 12 hours, accuracy is unlikely to be improved over the Fire Weather Planning Forecast (FWF). If the FWF does not contain the desired forecast information, customers may call the duty forecaster at the appropriate NWS office for additional detail.

#### **4. National Fire Danger Rating System Forecasts (FWM)**

The National Fire Danger Rating System is an assessment of wildfire danger, based on fire weather conditions at key points throughout the United States. The NWS role in NFDRS is to make 24-hour weather projections that influence the following day's fire danger indices.

NFDRS observations occur at 1300 LST (1400 LDT). The NWS makes forecasts for these locations at 1300 LST (1400 LDT) the following day. This forecast data is combined with fuel moisture conditions to produce various indices describing fire danger.

Fire weather observations are quality controlled by interagency personnel before being provided to NWS forecasters via the Weather Information Management System (WIMS). Observations failing to reach the NWS through this medium may be noted as missing, and can be eliminated from the NFDRS process.

##### **Format:**

The NFDRS (FWM) forecast format is outlined in NWSI 10-4 of the NDS. Required meteorological elements include state of weather, temperature, humidity, wind direction and speed, precipitation duration, and lightning activity level. An NFDRS forecast may be issued as a zone trend (typically where a fire weather zone contains a sufficient amount of observation stations) or as a station specific forecast.

#### **5. Supplementary Products**

The following products below are not necessarily issued as a part of the [Interagency Agreement for Meteorological Services](#) but are issued based on the guidelines from the [NDS](#):

##### **a. Hazardous Weather Outlooks**

NWS offices are encouraged to mention Red Flag Warning, Fire Weather Watches, and other wildfire risk information in Hazardous Weather Outlooks. The decision of when to issue this product is left to the discretion of each forecaster as well local NWS office policies. The phrase "fire danger" should only be used in referencing the assessments provided by the Forest Service.

**b. Fire Danger Statements**

Fire Danger Statements are issued on an as needed basis, when there is either a very high or extreme fire danger. These conditions are determined and are based on stage of vegetation, expected afternoon high temperature, afternoon minimum relative humidity and daytime wind speed. Also included in the product are any burn bans that may be in effect.

**c. Area Forecast Discussions**

Area Forecast Discussions are semi-technical products used to explain scientific rationale behind a forecast. Forecasters also use this medium to express forecast confidence levels and to summarize watches, warnings and/or advisories in effect. The format of the product will occasionally contain a special fire weather discussion – mainly when fire weather parameters approach critical values. The bottom portion of these products contains a summary of any RFWs in effect; however, product issuance does not always correspond to changes in RFW status.

**d. Special Weather Statements**

The Special Weather Statement may be issued to alert agencies, the media, and the general public of significant fire weather related events. Some offices may use this product in lieu of a Fire Danger Statement, for fire weather events that are expected to remain just below red flag criteria.

**e. Fire Warnings**

Fire Warnings are issued by NWS Offices, and are tone alarmed on NOAA Weather Radio at the request of state and local emergency management coordinators or county judges. These warning products are reserved for wildfire events which present long duration threats to life and property or those that require extraordinary evacuation instructions to the public.

**D. Forecast Weather Components**

This section will detail fire weather forecast parameters used in the fire weather forecast products issued by NWS offices serving Texas.

**1. Headline Statement/Weather Synopsis**

- Used at the beginning of the FWF, RFW, and FWS products
- Focuses on changes in the weather that will impact fire behavior.
- Headline statements used when significant fire weather events are occurring or expected



- Allows for qualitative discussion on weather trends such as the time of inversion burn-off.

## **2. Precipitation and Thunderstorms**

- Expressed in most NWS forecast products as the percent chance that a given location will receive 0.01 inches of precipitation for a 12 hour period.
- A forecast wetting rain is considered to be 0.10 inches for Texas unless otherwise noted.
- Thunderstorm influences that have a potential to produce critical fire weather conditions are expected to be detailed in the weather synopsis.

## **3. Sky Condition**

- Usually expressed in terms of percent coverage.
- Trends often discussed qualitatively in the synopsis section when changes impact mixing levels.

## **4. Miscellaneous Weather Phenomena**

Smoke, fog, and dust expected to create significant problems for wildfire control efforts should be included in the synopsis of the forecast. Severe weather, winter weather, and flash flood events are unlikely to occur during extreme wildfire events but could still be of interest to the user agencies for wildland planning efforts. Some of these parameters may be used in a tabular description for “weather”.

## **5. Relative Humidity (RH)**

- Expressed in % as the ratio of the amount of water vapor actually in the air compared to the amount the air is capable of holding at its temperature and pressure.
- Critical to fire management activities and are always included in routine and spot forecasts.
- RH values can vary greatly over a small area due to variations in topography, vegetation and location with respect to bodies of water; may be expressed as a range of values.

## **6. Winds and Mixing**

Wind speed and direction are generally indicated for the most hazardous part of the day or at other times specified in the forecast. The NDS requires that users of fire weather forecasts are made aware of the level for which the wind is forecast, i.e., eye-level, 20 feet, free-air, etc. Maximum gusts, erratic winds, and wind shifts should be mentioned when expected. The three most common wind assessments are listed below.

### **a. 20-foot winds**

Winds at 20 feet above the ground or above the average height of vegetation are the most common winds used in the routine fire weather forecast. Since most

surface stations used for NWS forecasts measure the wind at 33 feet, a reduction factor is needed to arrive at the 20-foot wind. FTS/RAWS sites, which measure 20 foot wind speed and direction, can be used to compare the 33 foot winds, but are available for only a few NWS offices with responsibilities in Texas.

#### **b. Eye-level winds**

Eye-level (or 6-foot) winds are often used for spot forecasts to compliment preliminary reports taken at the burn site. These wind forecasts may also be estimated using a reduction factor to the available surface wind data.

#### **c. Transport winds / ventilation index**

Average winds in the mixing layer and the depth of the mixing layer are parameters that are helpful for land management agencies to evaluate the potential for very large fires and also for smoke dispersal. Data computed from morning atmospheric soundings and model forecast soundings are used to provide ventilation values for periods of maximum heating. The following are terms and definitions necessary to understanding ventilation data and values:

##### **i. Mixing height or mixing depth**

The height to which vigorous mixing occurs due to heating. Units are in Feet above ground level (AGL), with ground level being the elevation above mean sea level (MSL) of the upper-air site. It is important that wildland fire managers note the difference in elevation between the burn site and the referenced upper-air site, and modify the provided mixing depths accordingly.

##### **ii. Transport Winds**

A measure of the average rate of horizontal transport of air within the mixing layer. Units can be expressed in knots (1 knot = 1.15 mph) or mph. An average wind direction (the direction from which the wind is blowing) is provided. If winds are light and variable, then it may be best to consider local drainage effects when in critical situations.

##### **iii. Ventilation Index**

The product of the mixing height and the transport wind speeds. It is a measure of the volume rate of horizontal transport of air within the mixing layer per unit distance normal to the winds. Units are in knot-feet. As a guide, the following categories have been established to describe the ventilation...

Excellent	150,000 kt-ft or greater
Very Good	100,000-149,999 kt-ft
Good	60,000-99,999 kt-ft
Fair	40,000-59,999 kt-ft
Poor	less than 40,000 kt-ft

When ventilation values are less than 40,000 kt-ft along with transport winds

below 7.0 knots, dispersion of any pollutants released into the atmosphere will be severely limited.

## 7. Lightning Activity Level

Smoke, fog Lightning Activity Level (LAL) is a commonly used measure of the amount of lightning activity using values 1 to 6 where:

- **LAL 1** – No thunderstorms.
- **LAL 2** – Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1-5 cloud to ground strikes in a 5 minute period.
- **LAL 3** – Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6-10 cloud to ground strikes in a 5 minute period.
- **LAL 4** – Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11-15 cloud to ground strikes in a 5 minute period.
- **LAL 5** – Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.
- **LAL 6** – Same as LAL 3 except thunderstorms are dry (no rain reaches the ground). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.

## 8. Haines Index

The Haines Index (HI) is a numerical value that indicates the potential for large wildfires to experience extreme fire behavior (i.e. crowning, spotting, and rapid rates of spread). The HI combines both the instability and dryness of the air by examining the lapse rate between two pressure levels in the atmosphere and the dryness at one of the pressure levels. There are three different methods of computing HI depending upon whether the area elevation is considered low, medium or high. Each NWS office determines the elevation which is most suitable for their area of responsibility. For each elevation, Haines Index classifications are assigned to values 2 through 6 as shown below...

HAINES INDEX	POTENTIAL FOR LARGE FIRE GROWTH
2 or 3	Very Low
4	Low
5	Moderate
6	High

The HI numbers are computed for each elevation using the following parameters...

HI	=	STABILITY TERM (A)	+	MOISTURE TERM (B)
Low Elevation HI	=	950-850 MB TEMP A=1 when 3°C or less A=2 when 4-7°C A=3 when 8°C or more	+	850 MB TEMP-DEW POINT B=1 when 5°C or less B=2 when 6-9°C B=3 when 10°C or more

Mid Elevation HI	=	850-700 MB TEMP A=1 when 5°C or less A=2 when 6-10°C or less A=3 when 11°C or more	+	850 MB TEMP - DEW POINT B=1 when 5°C or less B=2 when 6-12°C or less B=3 when 13°C or more
High Elevation HI	=	700-500 MB TEMP A=1 when 17°C or less A=2 when 18-21°C A=3 when 22°C or more	+	700 MB TEMP - DEW POINT B=1 when 14°C or less B=2 when 15-20°C B=3 when 21°C or more

## 9. Inversion Burn-off

Information on inversion burn-off time and/or temperature is an optional forecast parameter that many user agencies may request. Since eroding inversions are often highly variable over a small area, forecast inversion burn-off times and temperatures will be most accurate and useful when used in site-specific weather forecasts. However, a qualitative analysis can be useful for synoptic discussions if forecaster confidence is high enough.

## E. Specialized Services

Special services are meteorological services provided to customer agencies with unique requirements for fire weather support. These services are usually needed at a location outside the WFO and performed by either a fire weather program leader (FWPL) or an incident meteorologist (IMET). Special services include any on-site meteorological service such as weather observer training, weather station visits, and training requested by other user agencies.

Special services are usually initiated by the requesting agency, and costs such as travel, overtime, and per diem will be reimbursable to the NWS. Costs to be recovered from these agencies are calculated on the basis of expense reports submitted by the Forecast Office to NWS Southern Region Headquarters. Billing of the user agencies is handled by the appropriate NWS administrative division based on the expense report. Bills include a statement of services rendered, as well as the dates and locations of services provided.

### 1. The IMET Program

The NWS maintains a cadre of roughly 60 highly trained Incident Meteorologists (IMETs) that await dispatch to on-site locations in support of incident response efforts for both wildfire and non-wildfire incidents. Training in microscale forecasting, fire behavior, and fire suppression operations makes these fire weather forecasters key members of the Incident Command System (ICS). An increasing amount of forecasters are also being trained for support of hazardous material incidents.

IMETs use special equipment in preparing critical forecasts used in wildfire suppression and prescribed burning projects. One of these tools is the All-hazard Meteorological Response System (AMRS) which enables forecasters to operate at

the incident command post, providing close meteorological support to the suppression efforts. The AMRS can be used throughout the country wherever wildfire, chemical spills, and other catastrophes threatens life, property, or other valuable resources.

These IMETs can deploy rapidly with portable forecast and communications equipment to provide critical fire weather forecasting support. The forecaster sets up a portable unit near the fire lines and provides critical information that helps fire managers decide where to move fire crews, learn about incoming weather, plan tactics, and provide for fire fighter and public safety.

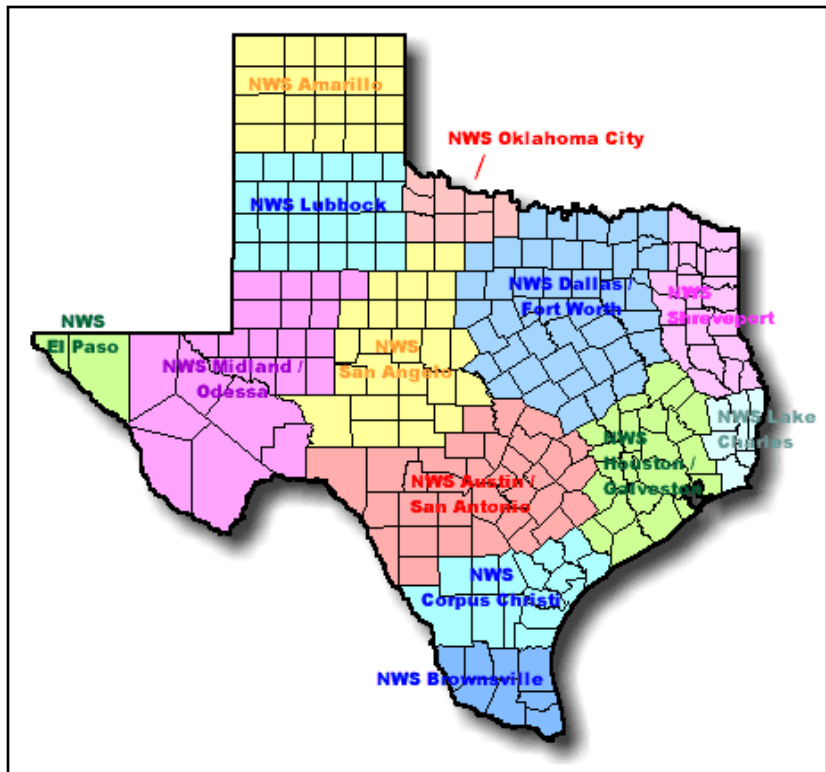
Requests for the on-site meteorological services should be made through the National Incident Management System (NIMS), of which the [Southwest Area Coordination Center](#) in Albuquerque, NM serves portions of Texas west of the 100 W° longitude and the [Southern Area Coordination Center](#) in Atlanta, GA serves portions of Texas east of 100 W° longitude. In some localized incidents, the FWPL or the MIC of a nearby NWS office will receive requests for IMET services in their County Warning and Forecast Area (CWFA). Typically, the IMET nearest the incident will be deployed. TICC has the authority to request these special services as long as the IMET is located within the jurisdiction of TICC's dispatch zone. TICC managers will enter the availability of the requested IMET in the Resource Ordering and Status System (ROSS). IMETs that have been dispatched locally need to coordinate their unavailability with the National IMET Program Leader, Larry Van Bussum and the Regional Fire Weather Program Manager, Paul Witsaman.

Not every NWS office has a certified IMET. USDA Forest Service Regions should keep an updated list of available IMETs.

## F. NWS Weather Forecast Offices

Each NWS Weather Forecast Office providing fire weather services to the state of Texas is staffed with meteorologists trained in fire weather forecasting 24 hours a day, 7 days a week, including holidays.

This section discusses the geographical service area of each NWS Office as well as the variety of services each office provides. Links to recently issued forecast products from each NWS office are provided in *Appendix 4*.



### Customer feedback on local policies

Questions or concerns regarding the policies outlined in this section should be directed to the fire weather program leader (FWPL) and/or the MIC of the respective NWS office(s) or contact...

[Paul Witsaman](#), Regional Fire Weather Program Manager  
NWS Southern Region Headquarters  
819 Taylor Street, Room 10E09  
Fort worth, Texas 76102  
Ph: 817.978.1100 x116

## 1. NWS Amarillo (AMA)

### Address:

1900 English Road  
Amarillo, TX 79108  
Phone: 806-335-1421

### Fire Weather Program Leader:

Ken Schneider

### Meteorologist-In-Charge:

Jose Garcia

Dallam	Sherman	Hansford	Ochiltree	Lipscomb
Hartley	Moore	Hutchinson	Roberts	Hemphill
Oldham	Potter	Carson	Gray	Wheeler
Deaf Smith	Randall	Armstrong	Donley	Collingsworth

### Federal Land Management

#### Agencies Served:

- National Park Service  
(Alibates Flint Quarries  
National Monument and Lake Meredith National Recreation Area)
- U.S. Fish and Wildlife Service (Buffalo Lake National Wildlife Refuge)
- U.S. Forest Service (Black Kettle National Grassland, McClellan Creek  
National Grassland and Rita Blanca National Grassland)



### Red Flag Criteria for the Texas panhandle:

RFW criteria for the Amarillo NWS office must conform to the requirements from the [Southwest Area Fire Weather Operating Plan](#) which includes the following conditions simultaneously for 3 hours or more...

- 20 foot wind speeds of 20 mph or greater OR gusting to 35 mph or greater
- Relative Humidity of 15 percent or less
- NFDRS rating of HIGH or greater

Additional local criteria

- Dry lightning potential

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, Spot Forecasts and Fire Weather Point Forecast Matrices

### [Fire Weather Planning Forecast](#)

- Product ID: LBBFWFAMA
- WMO Header: FNUS54 KAMA
- Issuance Time: Routinely twice a day at 7 AM and 330 PM
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, precipitation

amount, LAL, mid level Haines Index, maximum height of the mixing layer (feet and meters AGL), mean transport wind speed (knots and m/s) and direction in the mixing layer, and ventilation rate

#### Fire Weather Watch/Red Flag Warning

- Product ID: LBBRFWAMA
- WMO Header: WWUS84 KAMA
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

#### Fire Danger Statement

- Product ID: LBBRFDAMA
- WMO Header: FNUS64 KAMA
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support high fire behavior and can be issued when there are ongoing wildfires anywhere in the Oklahoma and Texas panhandles

#### NFDRS Forecasts

- Product ID: LBBFWMAMA
- WMO Header: FNUS84 KAMA
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
CEDAR	418701	Hutchinson
BOOTLEG	418801	Deaf Smith

#### Fire Weather Point Forecast Matrices

- Product ID: LBBPFWAMA
- WMO Header: FOUS54 KAMA
- Issuance Time: Twice a day at no later than 8 AM and 4 PM
- Product Content: Various forecasted weather parameters every three hours for certain predefined points. The predefined points in Texas are:

COMMON NAME	TX COUNTY
AMARILLO	Potter
BOOTLEG RAWS	Deaf Smith
BORGER	Hutchinson
CEDAR RAWS	Hutchinson
DALHART	Hartley



## 2. NWS Austin/San Antonio (EWX)

### Address:

2090 Airport Road  
New Braunfels, TX 78130  
Phone: 830-629-0130

### Fire Weather Program Leader:

[Monte Oaks](#)

### Meteorologist-In-Charge:

Joe Arellano

### Federal Land Management Agencies Served:

- U.S. Fish and Wildlife Service (Balcones Canyonlands National Wildlife Refuge)
- National Park Service (Amistad National Recreation Area and Lyndon B. Johnson and San Antonio Missions National Historical Parks)
- The Austin/San Antonio NWS Office also serves Texas as a liaison office for interagency coordination.

### Red Flag Criteria for South Central Texas:

- 20-ft wind speeds of 15 mph or greater and RH below 20% (Counties along and southeast of the Balcones Escarpment)
- 20-ft wind speeds of 20 mph or greater and RH below 20% (Southern Plains and Hill Country Counties)\*
- Presence of dry lightning (LAL=6)

\*Southern Plains and Hill Country Counties are defined by [Predictive Service Area Maps](#) from the Texas Forest Service.

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, and Spot Forecasts

### [Fire Weather Planning Forecast](#)

- Product ID: SATFWFEWX
- WMO Header: FNUS54 KEWX
- Issuance Time: Routinely twice a day at 7 AM and 330 PM
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, maximum height of the mixing layer (feet AGL), mean transport wind speed (MPH) and



direction in the mixing layer, chance of wetting rain, LAL and low level Haines Index

#### Fire Weather Watch/Red Flag Warning

- Product ID: SATRFWEWX
- WMO Header: WWUS84 KEWX
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

#### NFDRS Forecasts

- Product ID: SATFWMEWX
- WMO Header: FNUS84 KEWX
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
BASTROP	415501	Bastrop
LAGRANGE	415602	Fayette
BIRD	417901	Gillespie
BALCONES CANYONLANDS	417902	Travis
GUADALUPE RIVER SP	418101	Comal
KICKAPOO CAVERNS SP	418001	Kinney
PEARSALL	418102	Frio

#### Fire Weather Point Forecast Matrices

- Product ID: SATPFWWEWX
- WMO Header: FOUS54 KEWX
- Issuance Time: Twice a day at around 4 AM and 4 PM
- Product Content: Various forecasted weather parameters every three hours for certain predefined points. The predefined points are:

COMMON NAME	TX COUNTY
BASTROP	Bastrop
LAGRANGE	Fayette
BIRD	Gillespie
BALCONES CANYONLANDS	Travis
GUADALUPE RIVER SP	Comal

### 3. NWS Brownsville (BRO)

**Address:**

20 South Vermillion  
Brownsville, TX 78521-5798  
Phone: 956-504-1432

**Fire Weather Program Leader:**

Jason Straub

**Meteorologist-In-Charge:**

Nezette Rydell

**Federal Land Management Agencies Served:**

- National Park Service (Padre Island National Seashore and Palo Alto Battlefield National Historical Site)
- U.S. Fish and Wildlife Service (Laguna Atascosa, Lower Rio Grande Valley, and Santa Ana National Wildlife Refuges)



**Red Flag Criteria for Deep South Texas:**

- Sustained 20 ft wind speeds of 25 mph or greater and RH at or below 35% for two hours or more
- If the USFWS notifies WFO BRO that the fuels have cured, then the RH criterion is removed

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, and Spot Forecasts

[Fire Weather Planning Forecast](#)

- Product ID: SATFWFBRO
- WMO Header: FNUS54 KBRO
- Issuance Time: Routinely once a day at 7 AM
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, RH trends for the first 24 hours and maximum height of the mixing layer (feet AGL)

[Fire Weather Watch/Red Flag Warning](#)

- Product ID: SATRFWBRO
- WMO Header: WWUS84 KBRO
- Issuance Time: Event Driven

- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

#### NFDRS Forecasts

- Product ID: SATFWMBRO
- WMO Header: FNUS84 KBRO
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
SANTA ANA NWR	418602	Hidalgo
LAGUNA ATASCOSA	418603	Cameron
FALCON LAKE	418604	Starr
LINN-SAN MANUAL	418605	Hidalgo

#### 4. NWS Corpus Christi (CRP)

**Address:**

300 Pinson Drive  
Corpus Christi, TX 78406-1803  
Phone: 361-289-0959

**Fire Weather Program Leader:**

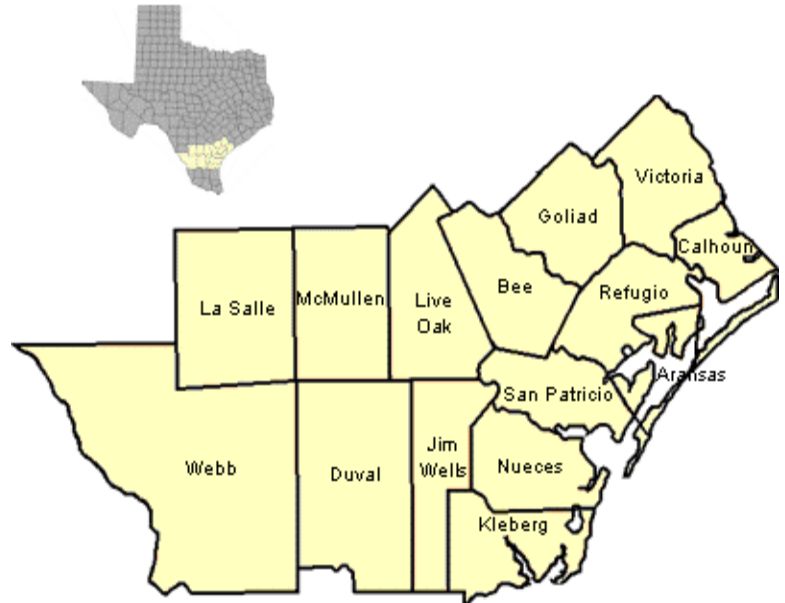
Jason Runyen

**Meteorologist-In-Charge:**

Scott Cordero

**Federal Land Management Agencies Served:**

- National Park Service (Padre Island National Seashore)
- U.S. Fish and Wildlife Service (Aransas National Wildlife Refuge)
- United States Department of Agriculture (Natural Resources Conservation Service)



**Red Flag Criteria for the Coastal Bend and Rio Grande Plains:**

- 20-Foot winds sustained or frequently gusting at or above 25 mph AND:

Coastal Counties	Inland Counties
RH at or below 40%	RH at or below 30%

- A Red Flag Warning may also be issued for any weather change that will increase fire danger, start new fires or present control problems to ongoing fires

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, Spot Forecasts, and Fire Weather Point Forecast Matrices

[Fire Weather Planning Forecast](#)

- Product ID: SATFWFCRP
- WMO Header: FNUS54 KCRP
- Issuance Time: Routinely once a day by 630 AM / twice a day from October through April, with a second issuance by 400 PM
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, maximum height of the mixing layer (feet AGL), mean transport wind speed (MPH) and direction in the mixing layer, LAL and low level Haines Index

#### Fire Weather Watch/Red Flag Warning

- Product ID: SATRFWCRP
- WMO Header: WWUS84 KCRP
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

#### Fire Danger Statement

- Product ID: SATRFDCRP
- WMO Header: FNUS64 KCRP
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on elevated fire weather conditions that fall just beneath red flag criteria.

#### NFDRS Forecasts

- Product ID: SATFWMCRP
- WMO Header: FNUS84 KCRP
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
GEORGE WEST	418201	Live Oak
MATAGORDA ISLAND	418503	Aransas
VICTORIA	418202	Victoria
ARANSAS NWR	418502	Aransas

#### Fire Weather Point Forecast Matrices

- Product ID: SATPFWCRP
- WMO Header: FOUS54 KCRP
- Issuance Time: Twice a day at around 4 AM and 4 PM
- Product Content: Various forecasted weather parameters every three hours for certain predefined points. The predefined points are:

COMMON NAME	TX COUNTY
GEORGE WEST	Live Oak
MATAGORDA ISLAND	Aransas
VICTORIA	Victoria
ARANSAS NWR	Aransas

## 5. NWS El Paso (EPZ)

**Address:**

7955 Airport Road  
Santa Teresa, NM 88008  
Phone: 505-589-3972/3982

**Fire Weather Program Leader:**

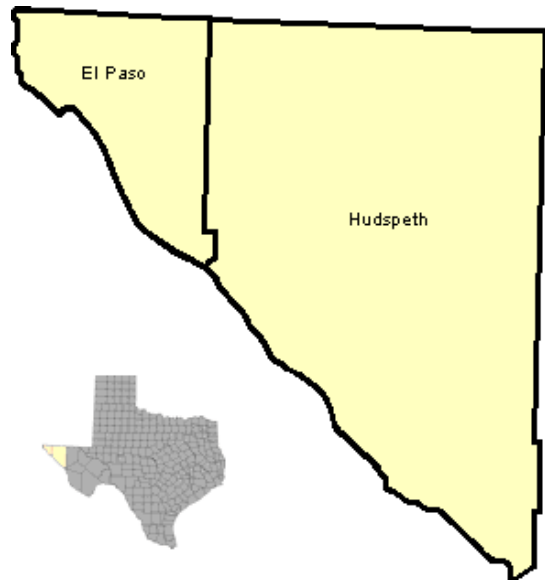
Tom Bird

**Meteorologist-In-Charge:**

Bill Alexander

**Land Management Agencies Served:**

- National Park Service (Chamizal National Memorial Park)
- Texas Forest Service
- The El Paso NWS Office also supports the State of Texas with a fully trained IMET



**Red Flag Criteria for Far West Texas:**

RFW criteria for the El Paso NWS office must conform to the requirements from the [Southwest Area Fire Weather Operating Plan](#) which includes the following conditions simultaneously for 3 hours or more...

- 20 foot wind speeds of 20 mph or greater OR gusting to 35 mph or greater
- Relative Humidity of 15 percent or less
- NFDRS rating of HIGH or greater

Note: The Silver City and Alamogordo Zone Dispatch Centers will be notified of RFW Issuances.

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, Spot Forecasts and Fire Weather Point Forecast Matrices

### Fire Weather Planning Forecast

- Product ID: LBBFWFEPZ
- WMO Header: FNUS54 KEPZ
- Issuance Time: See Below
- Product Content: See Below

FWFEPZ In season (approximately May 1st - Oct 31st)	FWFEPZ Off Season (approximately Nov. 1st - Mar 31st)
Issued routinely twice a day, first issued around 930 am and again at around 230 pm.	Issued once daily around 930 am.
Content includes a discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, LAL, high-level Haines Index, and 10000 foot winds (knots)	The off-season format discontinues LAL and Haines Index. Maximum height of the mixing layer (feet AGL), and mixing layer transport winds are added to aide in smoke dispersal decisions

### Fire Weather Watch/Red Flag Warning

- Product ID: LBBRFWEFEPZ
- WMO Header: WWUS84 KEPZ
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

### **NFDRS Forecasts:**

Currently there are no NFDRS sites in the Texas portion of the ELP CWFA.

### **Fire Weather Point Forecast Matrices**

Currently there are no matrices issued in the Texas portion of the ELP CWFA



## 6. NWS Fort Worth/Dallas (FWD)

### Address:

3401 Northern Cross Blvd.  
Fort Worth, Texas 76137-3610  
Phone: 817-429-2631

### Fire Weather Program Leader:

Joe Harris

### Meteorologist-In-Charge:

Bill Bunting

### Federal Land Management

#### Agencies Served:

- U.S. Fish and Wildlife Service (Hagerman National Wildlife Refuge)
- U.S. Forest Service (Caddo and Lyndon B. Johnson National Grasslands)

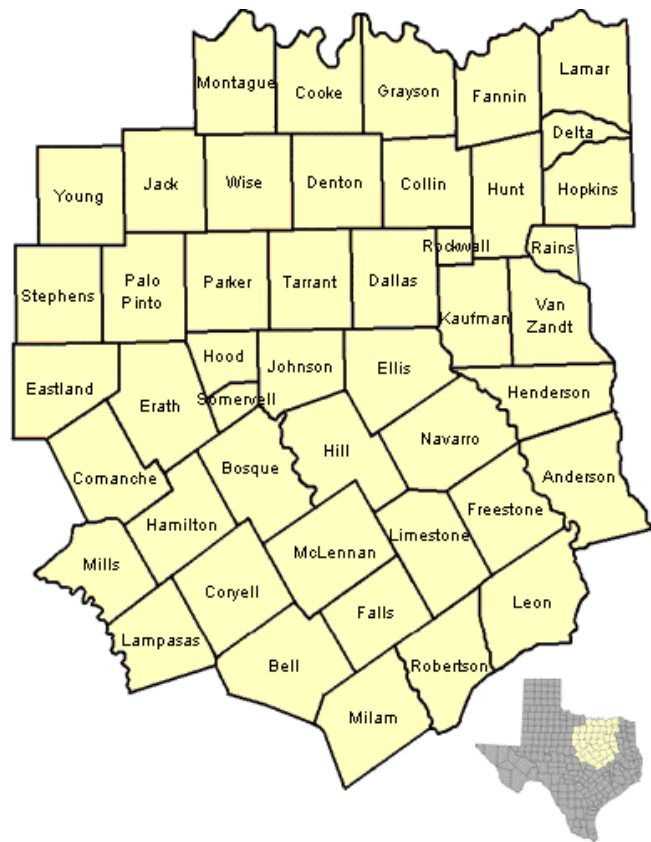
### Red Flag Criteria for North Central Texas:

- 20 foot winds 20 mph or higher with minimum RH of 30% or less
- Dry thunderstorms
- Ongoing large wildfires.

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, North Texas Grass Fire Danger Statements, NFDRS Forecasts, and Spot Forecasts

### Fire Weather Planning Forecast

- Product ID: FTWFWFFWD
- WMO Header: FNUS54 KFWD
- Issuance Time: Routinely twice a day by 8 AM and 4 PM
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, maximum height of the mixing layer (feet AGL/MSL-blended and meters AGL), transport wind speed (m/s) and direction in the mixing layer, sunshine hours and RH trends for the first 24 hours



#### Fire Weather Watch/Red Flag Warning

- Product ID: FTWRFWFWD
- WMO Header: WWUS84 KFWD
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

#### North Texas Grass Fire Danger Statement

- Product ID: FTWRFDFWD
- WMO Header: FNUS64 KFWD
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support a very high or extreme fire danger. These conditions are determined and are based on stage of vegetation, expected afternoon high temperature, afternoon minimum relative humidity and daytime wind speed. Also included in the product are any burn bans that may be currently in effect.

#### NFDRS Forecasts

- Product ID: FTWFWMFWD
- WMO Header: FNUS84 KFWD
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
CADDO	410202	Fannin
ATHENS	412101	Henderson
PALESTINE	412601	Anderson
ROUND PRAIRIE	413101	Robertson
POSSUM KINGDOM SP	419402	Palo Pinto
COMANCHE	419403	Comanche
LBJ	419601	Wise
GREENVILLE	419602	Hunt
CEDAR HILL SP	419701	Dallas
GRANBURY	419702	Hood
TEMPLE	419801	Bell
MCGREGOR	419802	McLennan

## 7. NWS Houston/Galveston (HGX)

### Address:

1353 FM 646, Suite 202  
Dickinson, TX 77539  
Phone: 281-337-5074

### Fire Weather Program Leader:

Kent Prochazka

### Meteorologist-In-Charge:

Gene Hafele

### Federal Land Management Agencies Served:

- National Park Service (Big Thicket National Preserve)
- U.S. Fish and Wildlife Service (Anahuac National Wildlife Refuge, Attwater Prairie Chicken National Wildlife Refuge and Big Boggy/Brazoria/San Bernard National Wildlife Refuges)
- U.S. Forest Service (Davy Crockett and Sam Houston National Forests)



### Red Flag Criteria for Southeast Texas:

- RH 20-25% or less combined with winds 15 to 25 mph sustained or higher, and fuel moistures are low.

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, and Spot Forecasts

### Fire Weather Planning Forecast

- Product ID: SATFWFHGX
- WMO Header: FNUS54 KHGX
- Issuance Time: Routinely twice a day around 730 AM and 330 PM
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, hours of sunshine, ventilation rate (meters squared/second), category day, height of the mixing layer (both feet and meters AGL), maximum height of the mixing layer (feet AGL and meters AGL), mean transport wind speed (both knots and meters/second) and direction in the mixing layer, LAL and RH trends for the first 24 hours

### Fire Weather Watch/Red Flag Warning

- Product ID: SATRFWHGX
- WMO Header: WWUS84 KHGX
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

#### NFDRS Forecasts

- Product ID: SATFWMHGX
- WMO Header: FNUS84 KHGX
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
RATCLIFF (NECHES/RATCLIFF in ASCADS)	413302	Houston
HUNTSVILLE	414102	Walker
COLDSPRINGS	414201	San Jacinto
CONROE	415109	Montgomery
DAYTON	415201	Liberty
ANAHUAC PORTABLE	416099	Chambers
ATWATERS	416601	Colorado
BRAZORIA	418301	Brazoria
SAN BERNARD	418302	Brazoria

## 8. NWS Lake Charles (LCH)

### Address:

500 Airport Blvd., #115  
Lake Charles, LA 70607-0668  
Phone: 337-477-5285

### Fire Weather Program Leader:

Kent G. Kuyper

### Meteorologist-In-Charge:

Andy Patrick

### Federal Land Management Agencies Served:

- National Park Service (Big Thicket National Preserve)
- U.S. Fish and Wildlife Service (McFaddin and Texas Point National Wildlife Refuges)



### Red Flag Criteria for Extreme Southeast

- In general, Fire Weather Watches and Red Flag Warnings will be issued when sustained winds of 20 to 25 mph or greater are expected while the region is at Preparedness Level 2 or greater. Preparedness Level 2 or higher in the Gulf Coast Area means that fuels are sufficiently dry and RH values are usually low enough (30-35% or lower) or strong winds to cause erratic and extreme fire behavior.

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, and Spot Forecasts

### Fire Weather Planning Forecast

- Product ID: NEWFWFLCH
- WMO Header: FNUS54 KLCH
- Issuance Time: Routinely twice a day around 6 AM and 3 PM
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, precipitation amount, precipitation timing and duration, LAL, maximum and minimum mixing heights (feet AGL/MSL-blended and m AGL/MSL-blended), mean transport wind speed (miles/hour and m/s) and direction in the mixing layer, dispersion index, ventilation rate (meters squared/second), category day, and Keetch-Byram Index

### Fire Weather Watch/Red Flag Warning

- Product ID: NEWRFWLCH
- WMO Header: WWUS84 KLCH
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

#### NFDRS Forecasts

- Product ID: NEWFWMLCH
- WMO Header: FNUS84 KLCH
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
WOODVILLE	414402	Tyler
KIRBYVILLE	414501	Jasper
SOUTHERN ROUGH	416101	Tyler
MCFADDIN	419901	Jefferson

## 9. NWS Lubbock (LUB)

### Address:

2579 South Loop 289, Suite 100  
Lubbock, TX 79423-1400  
Phone: 806-745-4260

### Fire Weather Program Leader:

Ronald McQueen

### Meteorologist-In-Charge:

Justin Weaver

### Federal Land Management Agency Served:

- U.S. Fish and Wildlife Service  
(Muleshoe National Wildlife Refuge)

Palmer	Castro	Swisher	Brisco	Hall	Childress
Bailey	Lamb	Hale	Floyd	Motley	Cottle
Cochran	Hockley	Lubbock	Crosby	Dickens	King
Yoakum	Terry	Lynn	Garza	Kent	Stonewall



### Red Flag Criteria for the South Plains of Northwest Texas:

RFW criteria for the Lubbock NWS office must conform to the requirements from the [Southwest Area Fire Weather Operating Plan](#) which includes the following conditions simultaneously for 3 hours or more...

- 20 foot wind speeds of 20 mph or greater OR gusting to 35 mph or greater
- Relative Humidity of 15 percent or less
- NFDRS rating of HIGH or greater

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, Spot Forecasts and Fire Weather Point Forecast Matrices

### [Fire Weather Planning Forecast](#)

- Product ID: LBBFWFLUB
- WMO Header: FNUS54 KLUB
- Issuance Time: Routinely twice a day around 6 AM and 3 PM
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, maximum height of the mixing layer (feet AGL), transport winds (knots), Haines Index and RH trends through 24 hours

### [Fire Weather Watch/Red Flag Warning](#)

- Product ID: LBBRFWLUB
- WMO Header: WWUS84 KLUB
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

### NFDRS Forecasts

- Product ID: LBBFWMLUB
- WMO Header: FNUS84 KLUB
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
CAPPROCK	418901	Briscoe
MATADOR WMA	418902	Motley

### Fire Weather Point Forecast Matrices

- Product ID: LBBPFWLUB
- WMO Header: FOUS54 KLUB
- Issuance Time: Twice a day at no later than 7 AM and 4 PM
- Product Content: Various forecasted weather parameters every three hours for certain predefined points. The predefined points are:

COMMON NAME	TX COUNTY
CAPPROCK RAWS	Briscoe
CHILDRESS	Childress
LUBBOCK	Lubbock
MATADOR RAWS	Motley
PLAINVIEW	Hale



## 10. NWS Midland/Odessa (MAF)

### Address:

2500 Challenger Drive  
Midland, TX 79706  
Phone: 432-563-5006

### Fire Weather Program Leader:

Gregory Murdoch

### Meteorologist-In-Charge:

Raymond Fagen

### Federal Land Management Agency Served:

- National Park Service (Big Bend National Park, Fort Davis National Historic Site and Guadalupe Mountains National Park)
- The Midland NWS Office also supports the State of Texas with a fully trained IMET



### Red Flag Criteria for the Trans-Pecos Region:

RFW criteria for the Midland/Odessa NWS office must conform to the requirements from the [Southwest Area Fire Weather Operating Plan](#) which includes the following conditions simultaneously for 3 hours or more...

- 20 foot wind speeds of 20 mph or greater OR gusting to 35 mph or greater
- Relative Humidity of 15 percent or less, and
- NFDRS adjective rating of HIGH or greater

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, Spot Forecasts and Fire Weather Point Forecast Matrices.

### [Fire Weather Planning Forecast](#)

- Product ID: LBBFWFMAF
- WMO Header: FNUS54 KMAF
- Issuance Time: During fire weather season (Mar 1 – Nov 1): Routinely twice a day no later than 930 AM and 330 PM. During off season: Routinely once a day no later than 930 AM.
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, maximum height of the mixing layer (feet AGL), transport winds (knots), Haines Index (mix of

mid and high levels), LAL, 10,000 foot winds (mph), ventilation data and RH trends through 24 hours.

#### Fire Weather Watch/Red Flag Warning

- Product ID: LBBRFWMAF
- WMO Header: WWUS84 KMAF
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

#### NFDRS Forecasts

NWS Midland/Odessa is responsible for NFDRS zone 350 in southeast New Mexico and the Texas portion of zone 364, which includes the Guadalupe Mountains NP. In order for the forecaster to issue a forecast, an observation must be received. Individual station trends forecast are issued in zone 364 so there is no conflict with the zone trend forecast for 364 issued by El Paso and zone trends are provided for zone 350. Additional site forecasts are listed in the table below. Additional information on NFDRS forecasts will be provided in the LAOP for the Midland/Odessa office.

- Product ID: LBBFWMAF
- WMO Header: FNUS84 KMAF
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
PINERY	417101	Culberson
THE BOWL	417103	Culberson
FORT DAVIS	417201	Jeff Davis
DAVIS	417201	Jeff Davis
PANTHER JUNCTION	417401	Brewster
CHISOS	417403	Brewster
MIDLAND	419202	Midland

#### Fire Weather Point Forecast Matrices

- Product ID: LBBPFWMAF
- WMO Header: FOUS54 KMAF
- Issuance Time: Twice a day at no later than 8 AM and 4 PM
- Product Content: Various forecasted weather parameters every three hours for certain predefined points. The predefined points are:

COMMON NAME	TX COUNTY
MIDLAND RAWS	Midland
FORT DAVIS RAWS	Jeff Davis

MARFA AWOS	Presidio
CHISOS RAWS	Brewster
PANTHER JUNCTION RAWS	Brewster
PINERY RAWS	Culberson
THE BOWL RAWS	Culberson

## 11. NWS Oklahoma City (OUN)

**Address:**

120 David L. Boren Blvd.  
Suite 2400  
Norman, OK 73072  
Phone: 405-325-3816

**Fire Weather Program Leader:**

Scott Curl

**Meteorologist-In-Charge:**

Mike Foster

**Federal Land Management Agency**

**Served:**

None



**Red Flag Criteria:**

- RH less than or equal to 20% combined with 20-foot winds of 20 mph or higher.
- Availability of fuel during the growing season is also considered.

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, and Spot Forecasts

[Fire Weather Planning Forecast](#)

- Product ID: OKCFWFOUN
- WMO Header: FNUS54 KOUN
- Issuance Time: Routinely twice a day no later than 445 AM and 415 PM.
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, precipitation amount, maximum and minimum height of the mixing layer (feet AGL and m AGL), transport winds (mph and m/s), ventilation rate (meters squared/second) and category day

[Fire Weather Watch/Red Flag Warning](#)

- Product ID: OKCRFWOUN
- WMO Header: WWUS84 KOUN
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

### NFDRS Forecasts

- Product ID: OKCFWMOUN
- WMO Header: FNUS84 KOUN
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
MILLER CREEK	419301	Baylor

## 12. NWS San Angelo (SJT)

### Address:

7654 Knickerbocker Road  
San Angelo, TX 76904-7892  
Phone: 325-944-9445

### Fire Weather Program Leader:

Mark Cunningham

### Meteorologist-In-Charge:

Buddy McIntyre

### Federal Land Management Agency Served:

- United States Department of Agriculture (Natural Resources Conservation Service)
- The San Angelo NWS Office also supports the State of Texas with a fully trained IMET



### Red Flag Criteria for West Central Texas:

- Minimum afternoon RH 20% and 20 foot winds of 20 mph.
- NFDRS adjective rating of HIGH or greater

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, Spot Forecasts and Fire Weather Point Forecast Matrices.

### Fire Weather Planning Forecast

- Product ID: LBBFWSJT
- WMO Header: FNUS54 KSJT
- Issuance Time: Routinely twice a day around 5 AM and 2 PM.
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, maximum and minimum height of the mixing layer (feet AGL) and transport winds (mph)

### Fire Weather Watch/Red Flag Warning

- Product ID: LBBRFWSJT
- WMO Header: WWUS84 KSJT
- Issuance Time: Event Driven
- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

### NFDRS Forecasts

- Product ID: LBBFWMSJT
- WMO Header: FNUS84 KSJT
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
BARNHART	417701	Crockett
MASON	417801	Mason
BARNHART (historical)	419201	Irion
HAMBY	419401	Callahan
COLORADO BEND SP	419501	San Saba
COLEMAN	419502	Coleman

### Fire Weather Point Forecast Matrices

- Product ID: LBBPFWSJT
- WMO Header: FOUS54 KSJT
- Issuance Time: Twice a day at no later than 8 AM and 4 PM
- Product Content: Various forecasted weather parameters every three hours for certain predefined points. The predefined points are:

COMMON NAME	TX COUNTY
BARNHART RAWS	Crockett
MASON RAWS	Mason
PAINT CREEK RAWS	Coke
HAMBY RAWS	Callahan
COLORADO BEND RAWS	San Saba
COLEMAN RAWS	Coleman

### 13. NWS Shreveport (SHV)

**Address:**

5655 Hollywood Ave.  
Shreveport, LA 71109-7750  
Phone: 318-631-3669

**Fire Weather Program Leader:**

Bill Adams

**Meteorologist-In-Charge:**

Armando Garza

**Federal Land Management Agency Served:**

- U.S. Forest Service (Angelina and Sabine National Forests)
- U.S. Fish and Wildlife Service (Caddo Lake Wildlife Refuge)

**Red Flag Criteria:**

- Strong wind (generally 25 mph or higher [20 mph RAWS]) with low RH (25% or less)
- Fire danger in the high or extreme categories.

**Fire Weather Products Issued:** Fire Weather Planning Forecasts, Red Flag Warnings, Fire Weather Watches, NFDRS Forecasts, and Spot Forecasts

[Fire Weather Planning Forecast](#)

- Product ID: NEWFWSHV
- WMO Header: FNUS54 KSHV
- Issuance Time: Routinely twice a day around 7 AM and 3 PM.
- Product Content: Discussion, information on any fire weather watches and red flag warnings in effect, NWSI 10-401 required elements, precipitation amount, precipitation duration, 500 m/1700 ft mixing height temperatures, maximum mixing heights (meters and feet MSL), mean transport wind speed (meters/second and miles/hour) and direction in the mixing layer, ventilation rate (meters squared/second), and category day and stability class

[Fire Weather Watch/Red Flag Warning](#)

- Product ID: NEWRFWSHV
- WMO Header: WWUS84 KSHV
- Issuance Time: Event Driven





- Product Content: Discussion elaborating on the weather conditions that support extreme fire behavior

#### NFDRS Forecasts

- Product ID: NEWFWMSHV
- WMO Header: FNUS84 KSHV
- Issuance Time: Each afternoon after NWS forecasters receive the FWO collective that includes the following stations:

COMMON NAME	STATION ID	TX COUNTY
CLARKSVILLE	410401	Red River
TEXARKANA	410501	Bowie
LINDEN	411102	Cass
GILMER	411401	Upshur
CADDO LAKE	411901	Harrison
HENDERSON	412202	Rusk
SABINE NORTH	412901	Shelby
ZAVALLA	413503	Angelina
LUFKIN	413509	Angelina
SABINE SOUTH	413701	Sabine

### **III. APPENDICES**

Appendix 1: RFW Criteria for Texas NWS Offices

Appendix 2: NFDRS Stations

Appendix 3: List of Abbreviations and Acronyms

Appendix 4: Internet Links

Appendix 5: Texas IMET List

Appendix 6: Agency Signatories

## Appendix 1: RFW RH / Wind Criteria Summary for Texas

**Summary Disclaimer:** For complete Red Flag criteria listings for each NWS Office, including the use of fuels assessments, fire danger classifications, and dry lightning criteria, please see *Section II.F*

<b>NWS OFFICE</b>	<b>RH CRITERIA</b> (Percentages expressed as “at or below minimums” or “at or above maximums” unless otherwise noted)	<b>WIND CRITERIA</b> (Wind heights and speeds indicated as 20 FT and in MPH unless otherwise noted)
<b>AMARILLO (AMA)</b>	15	20
<b>AUSTIN/SAN ANTONIO (EWX)</b>	20	15 (along and S of the escarpment) 20 (Hill Country and South Plains PSAs)
<b>BROWNSVILLE (BRO)</b>	35	25
<b>CORPUS CHRISTI (CRP)</b>	30 (Inland) 40 (Coastal)	25
<b>EL PASO (EPZ)</b>	15	20
<b>FORT WORTH/DALLAS (FWD)</b>	30	25 (33 FT level: Actual values bases on 20-30 MPH wind advisory criteria)
<b>HOUSTON/GALVESTON (HGX)</b>	20 (with moderate fuel moisture) 25 (with low fuel moisture)	25 (with moderate fuel moisture) 15 (with low fuel moisture)
<b>LAKE CHARLES, LA (LCH)</b>	30 (with moderate fuel moisture) 35 (with low fuel moisture)	25 (with moderate fuel moisture) 20 (with low fuel moisture)
<b>LUBBOCK (LUB)</b>	15	20
<b>MIDLAND/ODESSA (MAF)</b>	15	20
<b>NORMAN, OK (OUN)</b>	20	20
<b>SAN ANGELO (SJT)</b>	20	20
<b>SHREVEPORT, LA (SHV)</b>	25	25

## Appendix 2: NFDRS Stations

COMMON NAME	GOES ID	NWS OFFICE	NWS ID	TX COUNTY
CEDAR	418701	Amarillo	AMA	Hutchinson
BOOTLEG	418801	Amarillo	AMA	Deaf Smith
SANTA ANA NWR	418602	Brownsville	BRO	Hidalgo
LAGUNA ATASCOSA	418603	Brownsville	BRO	Cameron
FALCON LAKE	418604	Brownsville	BRO	Starr
LINN-SAN MANUAL	418605	Brownsville	BRO	Hidalgo
GEORGE WEST	418201	Corpus Christi	CRP	Live Oak
VICTORIA	418202	Corpus Christi	CRP	Victoria
PADRE	418501	Corpus Christi	CRP	Kleberg
ARANSAS NWR	418502	Corpus Christi	CRP	Aransas
MATAGORDA ISLAND	418503	Corpus Christi	CRP	Aransas
CADDO	410202	Ft. Worth	FWD	Fannin
ATHENS	412101	Ft. Worth	FWD	Henderson
PALESTINE	412601	Ft. Worth	FWD	Anderson
ROUND PRARIE	413101	Ft. Worth	FWD	Robertson
POSSUM KINGDOM SP	419402	Ft. Worth	FWD	Palo Pinto
COMMANCHE	419403	Ft. Worth	FWD	Commanche
LBJ	419601	Ft. Worth	FWD	Wise
GREENVILLE	419602	Ft. Worth	FWD	Hunt
CEDAR HILL SP	419701	Ft. Worth	FWD	Dallas
GRANBURY	419702	Ft. Worth	FWD	Hood
TEMPLE	419801	Ft. Worth	FWD	Bell
MCGREGOR	419802	Ft. Worth	FWD	McLennan
RATCLIFF (NECHES/RATCLIFF in ASCADS)	413302	Houston	HGX	Houston
HUNTSVILLE	414102	Houston	HGX	Walker
COLDSPRINGS	414201	Houston	HGX	San Jacinto
CONROE	415109	Houston	HGX	Montgomery
DAYTON	415201	Houston	HGX	Liberty
ANAHUAC PORTABLE	416099	Houston	HGX	Chambers
ATWATERS	416601	Houston	HGX	Colorado
BRAZORIA	418301	Houston	HGX	Brazoria
SAN BERNARD	418302	Houston	HGX	Brazoria
WOODVILLE	414402	Lake Charles	LCH	Tyler
KIRBYVILLE	414501	Lake Charles	LCH	Jasper
SOUTHERN ROUGH	416101	Lake Charles	LCH	Tyler
MCFADDIN	419901	Lake Charles	LCH	Jefferson
CAPPROCK	418901	Lubbock	LUB	Briscoe
MATADOR WMA	418902	Lubbock	LUB	Motley
PINERY	417101	Midland	MAF	Culberson

COMMON NAME	GOES ID	NWS OFFICE	NWS ID	TX COUNTY
DOG CANYON	417102	Midland	MAF	Culberson
THE BOWL	417103	Midland	MAF	Culberson
MCKITTRICK CANYON	417104	Midland	MAF	Culberson
PX WELL	417105	Midland	MAF	Culberson
FORT DAVIS	417201	Midland	MAF	Jeff Davis
DAVIS	417201	Midland	MAF	Jeff Davis
PANTHER JUNCTION	417401	Midland	MAF	Brewster
CHISOS	417403	Midland	MAF	Brewster
MIDLAND	419202	Midland	MAF	Midland
BASTROP	415501	New Braunfels	EWX	Bastrop
LAGRANGE	415602	New Braunfels	EWX	Fayette
BIRD	417901	New Braunfels	EWX	Gillespie
BALCONES CANYONLANDS	417902	New Braunfels	EWX	Travis
KICKAPOO CAVERNS SP	418001	New Braunfels	EWX	Kinney
GAUDALUPE RIVER SP	418101	New Braunfels	EWX	Comal
PEARSALL	418102	New Braunfels	EWX	Frio
MILLER CREEK	419301	Norman	OUN	Baylor
BARNHART	417701	San Angelo	SJT	Crockett
MASON	417801	San Angelo	SJT	Mason
BARNHART (historical)	419201	San Angelo	SJT	Irion
HAMBY	419401	San Angelo	SJT	Callahan
COLORADO BEND SP	419501	San Angelo	SJT	San Saba
COLEMAN	419502	San Angelo	SJT	Coleman
CLARKSVILLE	410401	Shreveport	SHV	Red River
TEXARKANA	410501	Shreveport	SHV	Bowie
LINDEN	411102	Shreveport	SHV	Cass
GILMER	411401	Shreveport	SHV	Upshur
CADDO LAKE	411901	Shreveport	SHV	Harrison
HENDERSON	412202	Shreveport	SHV	Rusk
SABINE NORTH	412901	Shreveport	SHV	Shelby
ZAVALLA	413503	Shreveport	SHV	Angelina
LUFKIN	413509	Shreveport	SHV	Angelina
SABINE SOUTH	413701	Shreveport	SHV	Sabine

### **Appendix 3: List of Abbreviations and Acronyms**

AOP – Annual Operating Plan  
AMRS – All-hazard Meteorological Response System  
ASOS – Automated Surface Observation System  
ATMU – Advanced Technology Meteorological Unit  
AWIPS – Advanced Weather Information Processing System  
BLM - Bureau of Land Management  
COB – Close of Business  
CWFA – Country Warning and Forecast Area  
FBPS – Fire Behavior Prediction System  
FWF – Fire Weather Planning Forecast  
FWPL – Fire Weather Program Leader  
FWS – Fish and Wildlife Service  
GACC – Geographic Area Coordination Center  
HAZMAT – Hazardous Materials  
IMET – Incident Meteorologist  
LDT – Local Daylight Time  
LST – Local Standard Time  
NDS – NWS Directives System  
NFDRS – National Fire Danger Ratings System  
NIFC – National Interagency Coordination Center  
NPS – National Park Service  
NWCG – National Wildland Coordinating Group  
NWS – National Weather Service  
NWSI – National Weather Service Instruction  
RAWS – Remote Automated Weather System  
RFW – Red Flag Warning.  
SACC – Southern Area Coordination Center  
SWACC – Southwest Area Coordination Center  
TG – Telecommunications Gateway  
TICC – Texas Interagency Coordination Center  
USDA FS – United States Department of Agriculture Forest Service  
WIMS – Weather Information Management System

## Appendix 4: Internet Links

### NWS Directives System:

10-401 Fire Weather Services Product Specification	<a href="http://www.nws.noaa.gov/directives/sym/pd01004001curr.pdf">http://www.nws.noaa.gov/directives/sym/pd01004001curr.pdf</a>
10-402 Fire Weather Services On-Site Support	<a href="http://www.nws.noaa.gov/directives/sym/pd01004002curr.pdf">http://www.nws.noaa.gov/directives/sym/pd01004002curr.pdf</a>
10-403 Fire Weather Services Coordination and Outreach	<a href="http://www.nws.noaa.gov/directives/sym/pd01004003curr.pdf">http://www.nws.noaa.gov/directives/sym/pd01004003curr.pdf</a>
10-404 Fire Weather Services Annual Operating Plan and Report	<a href="http://www.nws.noaa.gov/directives/sym/pd01004004curr.pdf">http://www.nws.noaa.gov/directives/sym/pd01004004curr.pdf</a>
10-405 Fire Weather Services Training and Professional Development	<a href="http://www.nws.noaa.gov/directives/sym/pd01004005curr.pdf">http://www.nws.noaa.gov/directives/sym/pd01004005curr.pdf</a>
10-406 Interagency Agreement for Meteorological Services Among the Bureau of Land Management, Bureau of Indian Affairs, US Fish and Wildlife Service, and National Park Service of the US Dept. of Interior; the Forest Service of the US Dept. of Agriculture; and the National Weather Service of the US Dept. of Commerce (Recertified 03/05/07)	<a href="http://www.nws.noaa.gov/directives/sym/pd01004006curr.pdf">http://www.nws.noaa.gov/directives/sym/pd01004006curr.pdf</a>
10-407 Fire Weather Services Zone Change Process	<a href="http://www.nws.noaa.gov/directives/sym/pd01004007curr.pdf">http://www.nws.noaa.gov/directives/sym/pd01004007curr.pdf</a>

### NWS Forecast Office Links:

NWS Office	Homepage / Fire Weather Page
Amarillo (AMA)	<a href="http://www.srh.noaa.gov/ama">http://www.srh.noaa.gov/ama</a> <a href="http://www.srh.noaa.gov/ama/fire_weather">http://www.srh.noaa.gov/ama/fire_weather</a>
Austin/San Antonio (EWX)	<a href="http://www.srh.noaa.gov/ewx/">http://www.srh.noaa.gov/ewx/</a> <a href="http://www.srh.noaa.gov/ewx/html/firewx.htm">http://www.srh.noaa.gov/ewx/html/firewx.htm</a>
Brownsville (BRO)	<a href="http://www.srh.noaa.gov/bro">http://www.srh.noaa.gov/bro</a> <a href="http://www.srh.noaa.gov/bro/fire.php">http://www.srh.noaa.gov/bro/fire.php</a>
Corpus Christi (CRP)	<a href="http://www.srh.weather.gov/crp">http://www.srh.weather.gov/crp</a> <a href="http://www.srh.noaa.gov/crp/fire/default.html">http://www.srh.noaa.gov/crp/fire/default.html</a>
El Paso (EPZ)	<a href="http://www.srh.noaa.gov/elp">http://www.srh.noaa.gov/elp</a> <a href="http://www.srh.noaa.gov/epz/misc/firewx.php">http://www.srh.noaa.gov/epz/misc/firewx.php</a>
Fort Worth/Dallas (FWD)	<a href="http://www.srh.noaa.gov/fwd">http://www.srh.noaa.gov/fwd</a> <a href="http://www.srh.noaa.gov/fwd/firewx.html">http://www.srh.noaa.gov/fwd/firewx.html</a>
Houston/Galveston (HGX)	<a href="http://www.srh.noaa.gov/hgx">http://www.srh.noaa.gov/hgx</a> <a href="http://www.srh.noaa.gov/hgx/fire.htm">http://www.srh.noaa.gov/hgx/fire.htm</a>
Lake Charles (LCH)	<a href="http://www.srh.noaa.gov/lch">http://www.srh.noaa.gov/lch</a> <a href="http://www.srh.noaa.gov/lch/cgi-bin/fire.php">http://www.srh.noaa.gov/lch/cgi-bin/fire.php</a>
Lubbock (LUB)	<a href="http://www.srh.noaa.gov/lub">http://www.srh.noaa.gov/lub</a> <a href="http://www.srh.noaa.gov/lub/fire/index.html">http://www.srh.noaa.gov/lub/fire/index.html</a>
Midland/Odessa (MAF)	<a href="http://www.srh.noaa.gov/maf">http://www.srh.noaa.gov/maf</a> <a href="http://www.srh.noaa.gov/maf/Fire/index.php">http://www.srh.noaa.gov/maf/Fire/index.php</a>
Oklahoma City (OUN)	<a href="http://www.srh.noaa.gov/oun">http://www.srh.noaa.gov/oun</a> <a href="http://www.srh.noaa.gov/oun/firewx">http://www.srh.noaa.gov/oun/firewx</a>
San Angelo (SJT)	<a href="http://www.srh.noaa.gov/sjt">http://www.srh.noaa.gov/sjt</a> <a href="http://www.srh.noaa.gov/sjt/html/firewx/firewx.html">http://www.srh.noaa.gov/sjt/html/firewx/firewx.html</a>
Shreveport (SHV)	<a href="http://www.srh.noaa.gov/shv">http://www.srh.noaa.gov/shv</a> <a href="http://www.srh.noaa.gov/shv/firewx.htm">http://www.srh.noaa.gov/shv/firewx.htm</a>

### Fire Weather Planning Forecasts by Office:

NWS Office	Internet Address
AMA	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFAMA&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFAMA&amp;max=61</a>
EWX	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFEWX&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFEWX&amp;max=61</a>
BRO	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFBRO&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFBRO&amp;max=61</a>
CRP	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFCRP&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFCRP&amp;max=61</a>
ELP	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFELP&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFELP&amp;max=61</a>
FWD	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFFWD&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFFWD&amp;max=61</a>
HGX	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFHGX&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFHGX&amp;max=61</a>
LCH	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFLCH&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFLCH&amp;max=61</a>
LUB	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFLUB&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFLUB&amp;max=61</a>
MAF	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFMAF&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFMAF&amp;max=61</a>
OUN	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFOUN&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFOUN&amp;max=61</a>
SJT	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFSJT&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFSJT&amp;max=61</a>
SHV	<a href="http://www.srh.noaa.gov/productview.php?pil=FWFSHV&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=FWFSHV&amp;max=61</a>

## Fire Weather Watches/Red Flag Warnings by Office (only recent products are available)

NWS Office	Internet Address
AMA	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWAMA&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWAMA&amp;max=61</a>
EWX	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWEWX&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWEWX&amp;max=61</a>
BRO	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWBRO&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWBRO&amp;max=61</a>
CRP	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWCRP&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWCRP&amp;max=61</a>
ELP	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWELP&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWELP&amp;max=61</a>
FWD	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWFWD&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWFWD&amp;max=61</a>
HGX	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWHGX&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWHGX&amp;max=61</a>
LCH	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWLCH&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWLCH&amp;max=61</a>
LUB	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWLUB&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWLUB&amp;max=61</a>
MAF	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWMAF&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWMAF&amp;max=61</a>
OUN	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWOUN&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWOUN&amp;max=61</a>
SJT	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWSJT&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWSJT&amp;max=61</a>
SHV	<a href="http://www.srh.noaa.gov/productview.php?pil=RFWSHV&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=RFWSHV&amp;max=61</a>

## Spot Forecast Request and Monitor Pages by Office

NWS Office	Internet Address
AMA	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=ama">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=ama</a>
EWX	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=ewx">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=ewx</a>
BRO	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=bro">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=bro</a>
CRP	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=crp">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=crp</a>
ELP	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=elp">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=elp</a>
FWD	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=fwd">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=fwd</a>
HGX	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=hgx">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=hgx</a>
LCH	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=lch">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=lch</a>
LUB	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=lub">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=lub</a>
MAF	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=maf">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=maf</a>
OUN	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=oun">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=oun</a>
SJT	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=sjt">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=sjt</a>
SHV	<a href="http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=shv">http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=shv</a>

## Fire Weather Point Forecast Matrices by Office (experimental)

NWS Office	Internet Address
AMA	<a href="http://www.srh.noaa.gov/productview.php?pil=PFWAMA&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=PFWAMA&amp;max=61</a>
EWX	<a href="http://www.srh.noaa.gov/productview.php?pil=PFWEWX&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=PFWEWX&amp;max=61</a>
CRP	<a href="http://www.srh.noaa.gov/productview.php?pil=PFWCRP&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=PFWCRP&amp;max=61</a>
ELP	<a href="http://www.srh.noaa.gov/productview.php?pil=PFWEPZ&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=PFWEPZ&amp;max=61</a>
LUB	<a href="http://www.srh.noaa.gov/productview.php?pil=PFWLUB&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=PFWLUB&amp;max=61</a>
MAF	<a href="http://www.srh.noaa.gov/productview.php?pil=PFWMAF&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=PFWMAF&amp;max=61</a>
SJT	<a href="http://www.srh.noaa.gov/productview.php?pil=PFWSJT&amp;max=61">http://www.srh.noaa.gov/productview.php?pil=PFWSJT&amp;max=61</a>

National Fire Weather Page / RFW Status Page: <http://fire.boi.noaa.gov/>

Storm Prediction Center – Fire Weather Outlooks: <http://www.spc.noaa.gov/fire/>

Southern Region Fire Weather Page: <http://www.srh.noaa.gov/srh/cwwd/msd/firewx/index.htm>

Climate Prediction Center - Medium and Long Range WX Outlooks:

<http://www.cpc.noaa.gov/products/predictions/>

## Partner Agency Links:

[Texas Interagency Coordination Center](http://www.tamu.edu/ticc) - <http://www.tamu.edu/ticc>

[Texas Forest Service](http://txforests.tamu.edu) - <http://txforests.tamu.edu>

[TICC Predictive Services](http://www.tamu.edu/ticc/predictiveservices.htm) - <http://www.tamu.edu/ticc/predictiveservices.htm>

[National Interagency Fire Center](http://www.nifc.gov) - <http://www.nifc.gov>

[Southwest Area Coordination Center](http://gacc.nifc.gov/swcc) - <http://gacc.nifc.gov/swcc>



[Southern Area Coordination Center](http://gacc.nifc.gov/sacc) - <http://gacc.nifc.gov/sacc>  
[USDA Forest Service Fire Site](http://www.fs.fed.us/fire) - <http://www.fs.fed.us/fire>  
[National Park Service Fire Site](http://www.nps.gov) - <http://www.nps.gov>  
[U.S. Fish & Wildlife Service Fire Site](http://www.fws.gov/fire) - <http://www.fws.gov/fire>  
[USDA Wildland Fire Assessment System](http://www.wfas.net) - <http://www.wfas.net>

## Appendix 5: Texas IMET List

Valid 04/09/09

Active IMETs	NWS Office	IMET Trainees	NWS Office
Tom Bird	EPZ	Ken Schneider	AMA
Joe Harris	FWD	Jason Runyen	CRP
Greg Murdoch	MAF	Monte Oaks	EWX
Seth Nagle	SJT	Jason Dunn	FWD
Corey Pieper	SRH	Kent Prochazka	HGX
		Todd Lindley	LBB
		Kent Kuyper	LCH
		Chris Gitro	MAF
		Bill Adams	SHV
		Mark Cunningham	SJT
		Kurt Vanspeybroek	SMG
		Paul Witsaman	SRH

## **Appendix 6: Agency Signatories**

### **NWS Signatories:**

Monte Oaks  
Austin/San Antonio NWS Office  
[Monte.Oaks@noaa.gov](mailto:Monte.Oaks@noaa.gov)  
(830) 629-0130

Paul Witsaman  
NWS Southern Region Headquarters  
[Paul.Witsaman@noaa.gov](mailto:Paul.Witsaman@noaa.gov)  
(817) 978-1100

### **Customer Agency Signatories:**

#### **Forest Service:**

George.Weick  
US Forest Service, Lufkin

Tom Spencer  
Texas Forest Service, College Station

#### **National Park Service/US Fish and Wildlife Service:**

Joe Perez  
National Park Service/US Fish and Wildlife Service

#### **Texas Interagency Coordination Center:**

Cynthia Foster  
Texas Forest Service, College Station/Lufkin

#### **Southern Area Coordination Center:**

Denver Ingram  
Region 8 Predictive Services, Atlanta, GA